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CHRONOLOGY

- 19 Jan 81 The Air Staff decided to go ahead with the SEEK IGL00 program in Alaska, modernizing 13 radar sites to Minimally Attended Radar (MAR) status.
- 6 Feb 81 President of the Philippines approved erection of an AN/GPS-10 radar (part of the Pacific Barrier Radar network) on the grounds of the U.S. Naval Station San Miguel.
- 11 Mar 81 The U.S. and Canada finalized the Joint Policy Statement on air defense.
- 12 Mar 81 General Hartinger selected Peterson AFB as the site for the Backup Facility (BUF) to the NCHC. It would assume command and control functions should the mountain become incapable of performing them.
- 1 Apr 81 The 84th Fighter Interceptor Squadron (FIS) at Castle AFB, possessing 18 F-106s, deactivated.
- 12-15 Apr 81 Space Defense Operations Center crews, and Space Detection and Tracking System sensors under ADCOM operational control supported the Space Shuttle's maiden flight.
- May 81 Overhaul completed on the last of six diesel generators in Cheyenne Mountain.
- 12 May 81 U.S. and Canada renew NORAD agreement.
- 31 May 81 The Canadian satellite tracking unit (Baker-Nunn cameras) ceased operations at Cold Lake, Alberta.
- Jun 81 USAF terminated RCA's contract to upgrade the Tactical Operations Room at all three BMEWS sites because the contractor failed to demonstrate certain deficiencies had been corrected.
- 10 Jun 81 An exercise off the Newfoundland coast, using three F-15s, demonstrated the validity of the OTH-B System Operational Concept.
- 4 Aug 81 The first stage, including phases I and II, of the realignment of the NORAD Regions to conform with the NORAD ROCC regions took place.

29 Sep 81 | Ford Aerospace and Communications Corporation awarded \$4.2M contract to install a Missile Warning Bypass system in the NCMC.

1 Oct 81 | Cheyenne Mountain Support Group established to manage support activities in the NORAD Cheyenne Mountain complex.

1 Oct 81 | Lt Gen J. V. Hartinger, CINCNORAD, promoted to four-star rank.

2 Oct 81 | Air Force terminated contract with Technology Development Corporation of California for improvements to the DSP ground communications network because of unsatisfactory performance (cost growth and delays).

2 Nov 81 | The Air Force Systems Acquisition Review Council (AFSARC) conducted a formal review of the CONUS OTH-B program. This review led to authorization of a phased development program for operational OTH-B.

12-14 Nov 81 | ADCOM supported the second Space Shuttle flight.

Dec 81 | TAC signed a contract with the Command, Control and Communications Company (4C) for the provision of five ROCC/AWACS Digital Information Link (RADIL) units for the four CONUS ROCCs and the ROCC System Support Facility (RSSF).

17 Dec 81 | Maj Gen K. J. Thorneycroft (CF) Deputy CINCNORAD, promoted to Lieutenant General.

Chapter I

Mission, Organization, and Resources

Mission and Command

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The NORAD Agreement stipulated that CINCNORAD and his deputy come from different countries. In recognition of the relative size of the forces contributed by each country, CINCNORAD had always been a USAF four star general and his deputy a Canadian three star air officer. The USAF broke with tradition in late 1979, following a reorganization of its aerospace defense forces, and assigned Lieutenant General James V. Hartinger to command NORAD, ADCOM (Specified Command), and the new Aerospace Defense Center upon the retirement of General James A. Hill. The Canadian National Defence Headquarters followed suit, and with the transfer of Lieutenant General Kenneth E. Lewis in June 1980 he was replaced by Major General Kenneth J. Thorneycroft. The Reagan Administration's recognition of the need to strengthen strategic defense forces, however, created a favorable climate for restoration of the four

star rank at NORAD. Secretary of the Air Force Verne Orr said he and General Allen welcomed the move as part of the Air Force's effort to enhance its space efforts.⁴ General Hartinger received his fourth star effective 1 October 1981.⁵ The Canadian government then promoted General Thorneycroft to three star rank effective 17 December 1981.⁶

Organization

The U.S. and Canadian forces assigned an aerospace defense mission were under the operational control of CINCNORAD. Component commands were the U.S. Aerospace Defense Command (see Organization Charts on following pages) and the Canadian Air Defence Group. The NORAD joint staff in Colorado Springs consisted of USAF, Canadian, and U.S. Army, Navy, and Marine Corps personnel. Normally, the Joint Staff focused on issues of binational concern, with U.S. only matters handled by ADCOM (essentially the NORAD staff minus the Canadians). Several other USAF commands were responsible for organizing, training, and equipping forces under CINCNORAD/CINCAD control.

An organizational change during 1981 promised improved management of the NORAD Cheyenne Mountain Complex. Authority over support activities in the Mountain had become fragmented as a result of the 1979 reorganization. In October 1980, the Director of Combat Operations Support, Air Defense Combat Operations Staff, recommended forming an air base group and placing under it the civil engineers, the headquarters squadron section, and the security police. The ADC staff and commanders supported this plan to equalize authority and responsibility for upkeep of the Mountain by establishing a single manager. On 1 October 1981 USAF formed the Cheyenne Mountain Support Group and assigned it to ADC. On the same day, USAF designated and activated the 4801 Civil Engineering Squadron and assigned it to the CMSG. The 4800 Special Security Squadron was reassigned from Hq ADC to the CMSG. Also, a Headquarters Squadron Section of the CMSG was designated to provide personnel support.

As of 31 December 1981, actual annual cost avoidance resulting from the ADCOM reorganization was \$7.9 million. There had been a one-time cost of \$1.7 million to carry out the realignment. Manpower authorizations before and after the realignment were:

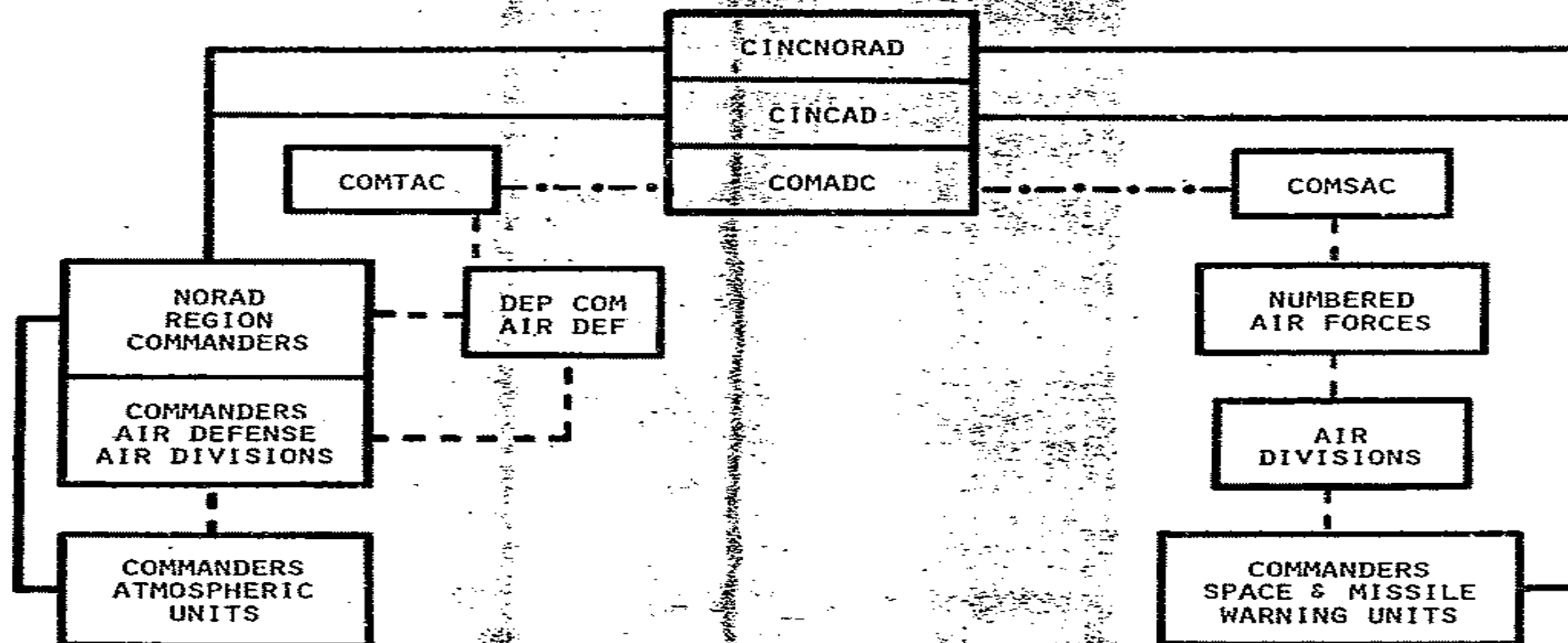
<u>Authorizations</u>	<u>Officer</u>	<u>Enlisted</u>	<u>Civilian</u>	<u>Total</u>
Before	1,010	2,995	1,545	5,550
After	<u>1,131</u>	<u>2,385</u>	<u>1,337</u>	<u>4,853</u>
Change	+ 121	- 610	- 208	- 697

OPCON CHART

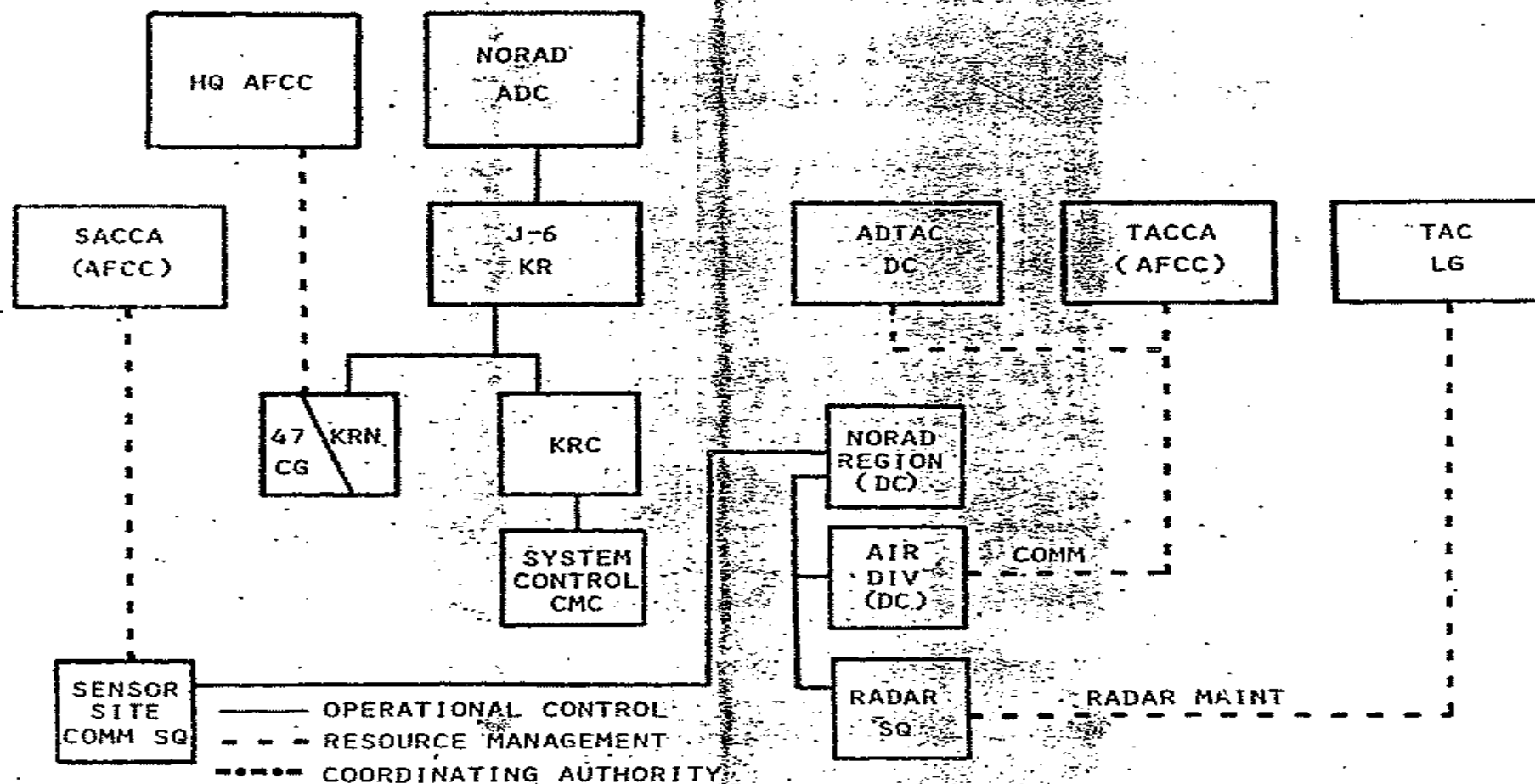
NORTH AMERICAN AEROSPACE DEFENSE COMMAND/ AEROSPACE DEFENSE COMMAND (SPECIFIED COMMAND)

COMMANDER IN CHIEF: GEN JAMES V. HARTINGER
DEPUTY COMMANDER IN CHIEF: L/GEN K.J. THORNEYCROFT (CCF)
VICE COMMANDER IN CHIEF: M/GEN BRUCE K. BROWN

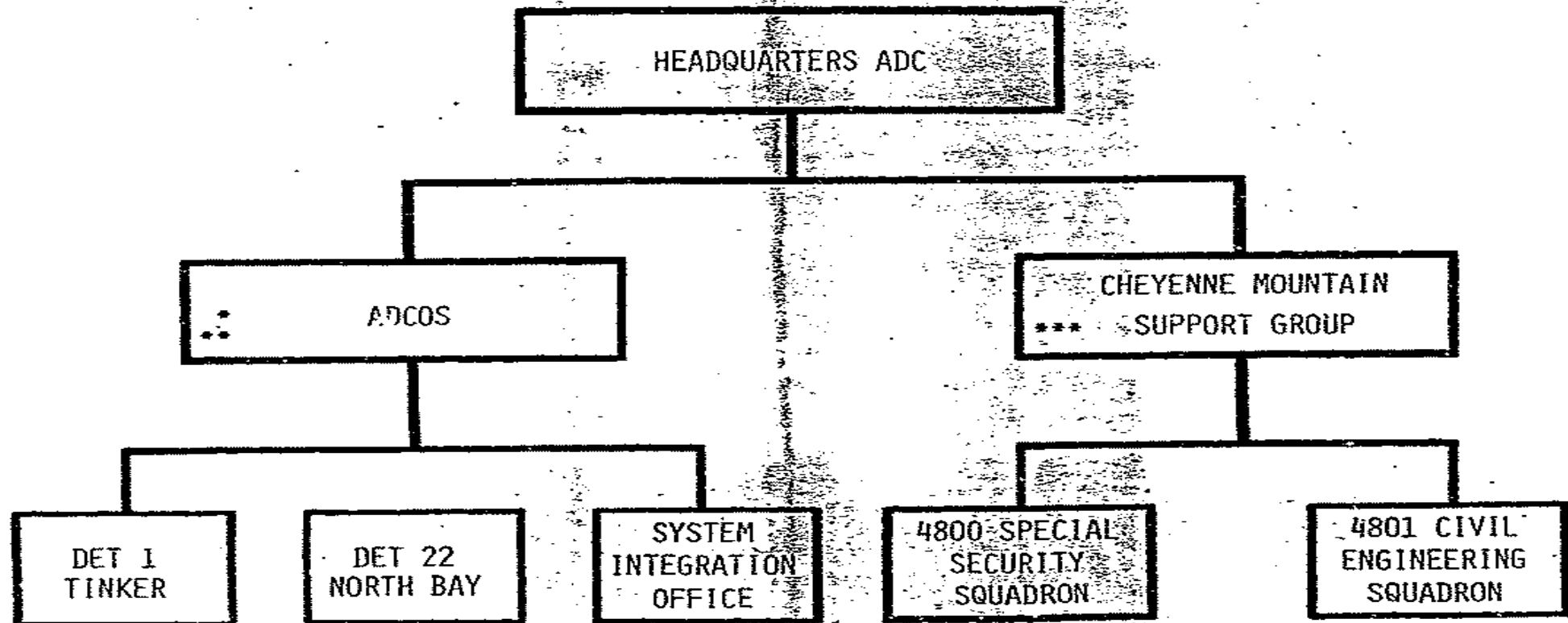
COMMAND RELATIONSHIPS



COMMAND RELATIONSHIPS (CONT'D)
 COMMUNICATIONS-ELECTRONICS OPERATIONS & CONTROL



AEROSPACE DEFENSE CENTER (ADC) ORGANIZATION



- * CINCAD DUAL HATTED AS ADCOS/CC
- ** INCLUDES INTELLIGENCE, COMMUNICATIONS-ELECTRONICS AND COMPUTER RESOURCES; OPERATIONS AND PUBLIC AFFAIRS FUNCTIONS WHICH ARE DUAL-HATTED ON ADC AND ADCOS STAFFS
- *** INCLUDES ADC SQUADRON SECTION

Resources

Manpower

At the end of 1980 ADC had 1642 authorized personnel. By the end of 1981, due to ADC's growing mission responsibilities, this figure had increased to 1765. Authorized/Assigned personnel on 31 December 1980 and 31 December 1981 were:

<u>Date</u>	<u>Officers</u>	<u>Enlisted</u>	<u>Civilian</u>	<u>Total</u>
31 Dec 80	607/603	685/739	350/320	1642/1662
31 Dec 81	678/651	730/779	357/361	1765/1791

The 1765 authorized spaces at the end of 1981 included 329 for the management of headquarters and 938 for the Aerospace Defense Combat Operations Staff (ADCOS) in Cheyenne Mountain. Of the 938, four hundred and ninety eight were for three units assigned to the Hq Cheyenne Mountain Support Group formed 1 October 1981: 63 for the Hq Squadron Section, 89 for the 4800 Special Security Squadron (SSS), 208 for the 4801 Civil Engineering Squadron, and 138 for ADCOS detachments. The overall increase of 123 authorizations was distributed within ADC as follows:

<u>Office</u>	<u>Number</u>
DCS/Operations--25 for SPADOC and 5 for Instructional System Development	30
Systems Integration Office	41
Small Staff Agencies	6
DCS/Plans Liaison with AFTEC	6
DCS/Communications, Electronics and Computer Resources--35 from AFCC and 3 from SAC	38
DCS/Intelligence--2 for audio/visual	2
Total	123

NORAD's Joint Table of Distribution (JTD) manpower authorizations rose by 54 or 10.7 percent. There were 505 manpower spaces authorized at the beginning of 1981 (237 officers, 262 enlisted, and 6 civilians) and 559 at the end of 1981 (253 officers, 290 enlisted, and 16 civilians). At the end of the year, there were assigned under the JTD 246 officers, 283 enlisted, and 14 civilian personnel.

Budget

The following table itemizes the operations budgets for FY 1980, FY 1981, and FY 1982. The FY 1980 budget was \$36.254 million,

the FY 1981 budget \$44.005 million, and the FY 1982 budget \$47.068 million. Initial funding for the FY 1981 budget was \$36.879 million. During FY 1981, ADC received an additional \$7.126 million to cover such items as the off-site test facility, the build-up of the Systems Integration Office, fuel price adjustments, and increased civilian pay costs. This brought the FY 1981 budget to \$44.005 million. In FY 1981, there had been a one time cost of \$1.4 million for the off-site test facility which included system testing, installation of equipment, system integration and purchase of peripheral devices. All of these dropped out in the FY 1982 budget. The figure of \$47.068 million for the FY 82 budget included several major areas of change. Funding for the first full year of operation of the Systems Integration Office would increase the budget \$3.1 million. Inflation increased the FY 1982 budget \$3.365 million. Finally, there was a decrease of \$1.288 million in budgeting for such major civil engineering needs as supplies and facilities projects.

In FY 1981, a new source of funds for CINCNORAD became available. On 5 December 1980, both houses of Congress passed an appropriations bill designating \$3.569 million in research and development funds for a CINCs' Command and Control Initiative Program. This source of funding bypassed the normal Planning, Programming, and Budgeting System (PPBS). It enabled the CINCs to carry out timely, low cost, near-term improvements to their command and control systems. Of the \$3.569 million, NORAD/ADCOM was allocated \$400,000. Within NORAD, the DCS/Communications, Electronics and Computer Resources became the office of prime responsibility (OPR) for managing acquisition projects.

In FY 1981, the CINCs' Command and Control Initiative Program funded three NORAD projects. The NORAD Alert System (NAS) Upgrade Development/Demonstration was contracted out for \$100,000. This would upgrade the alarm system for NORAD's alert interceptors. Eighteen thousand dollars was expended for consolidation of NORAD's Cheyenne Mountain Telecommunications Center. An additional \$57,000 allocated for this project was returned because there was insufficient time to negotiate the design of the project. This resulted from the project's late approval on 28 May 1981 which occurred mainly because the CINCs' C² Initiative Program was not approved until December 1980. The third project, a procedures, plans, and training project for Space Operations which dealt with SPADOC, was funded for \$148,500.¹³

Facilities

On 9 through 12 March 1981, a Hq USAF team, assisted by Hq SAC, NORAD/ADCOM, and 46 AERODW personnel resurveyed Peterson AFB. The team's purpose was to review the programmed relocation of NORAD/ADCOM from the Chidlaw Building in Colorado Springs to

ADC OPERATIONS BUDGET, FY 80, FY 81, FY 82

(in millions)

<u>Major Force Program</u>	<u>FY 80</u>	<u>FY 81</u>	<u>FY 82</u>
I Strategic Forces	\$34.687	\$42.034	\$44.817
II General Purpose Forces	0.429	0.910	0.780
III Intelligence and Communications	1.090	1.019	1.379
VIIIA Training and Other General Personnel Activities	0.005	0.006	0.016
IX Administration and Associated Activities	0.043	0.036	0.076
TOTAL	<u>\$36.254</u>	<u>\$44.005</u>	<u>\$47.068</u>

SOURCE: Operations Budget Authority by Major Force Program, Di
of Budget, Hq USAF for FYs 80, 81, and 82

Building 1470 (Hq 46 AERODW) on Peterson AFB. This relocation needed reevaluation because of mission changes affecting NORAD/ADCOM, SAC, and the space mission. In the interim between the original USAF beddown survey in 1979, and March 1981, NORAD/ADCOM manning had increased due, in significant part, to the establishment of the System Integration Office. At Peterson, beddown of an AFRES C-130 unit was planned, and a Phase IV Computer Upgrade by SAC was scheduled. It was also decided to locate the Consolidated Space Operations Center (CSOC) east of Peterson AFB. Although Building 1470 may have been adequate to house the ADC staff in 1979, an approximately 20,000 square foot shortfall of space existed by March 1981.¹⁴

In its outbrief to the NORAD/ADCOM and SAC staffs, the survey team presented four options:

Option 1. Use existing Peterson AFB facilities for Wing relocation and build a 33,000 square foot addition to Building 1470 to accommodate NORAD/ADCOM and 46 AERODW agencies.

Option 2. Build a 30,000 plus square foot minor usage addition to Building 845, the Computer Center, to permit housing of 95 percent of the 46 AERODW. Use existing wing facilities to house the remainder of the 46 AERODW. Construct a 20,000 square foot addition to Building 1470 to accommodate NORAD/ADCOM at one location at Peterson AFB.

Option 3. Build a new NORAD/ADCOM headquarters building at Peterson and allow the 46 AERODW to stay in Building 1470.

Option 4. Maintain status quo. NORAD/ADCOM would remain in the Chidlaw Building and 46 AERODW in Building 1470.

The team recommended Option 2 as the most economical and practical, and the most saleable to Hq USAF and Congress. Hq USAF approved the choice. If Congress approved and funded the addition, construction could start in 1984, be completed in late 1985, and NORAD/ADCOM would attain occupancy in early 1986.¹⁵

Based on a total manpower authorization of 699, the NORAD/ADCOM staff needed 96,600 square feet of space. Eleven general officers, one civil servant in the senior executive service, and 44 supporting staff positions required 15,246 square feet. Seven special purpose areas needed 6,750 square feet. The remaining 643 people on the staff were allocated 73,945 square feet or 115 square feet per person. ADC would continue its use of the Federal

* Peterson AFB would provide CSOC with base operating support.

Building and the NCMC for its strategic mission.¹⁶

Since NORAD/ADCOM would remain in the Chidlaw Building for the next several years, it sought to cut costs by reducing the amount of office space it occupied. Hq USAF tasked ADC to comply with office space standards in AFM 86-2, which specified between 115 and 130 square feet per building occupant. NORAD/ADCOM's goal became 120 square feet per occupant. To make this a reality, space-management representatives worked on consolidating office space in the Chidlaw Building during the year. The major moves to save space took place in the period June through September and all relocations were essentially complete by the end of the year.¹⁷ As a result of the consolidation, unoccupied space was available to turn back. ADC notified the Corps of Engineers of its requirements for space in the Chidlaw Building through 31 March 1986, and asked the Corps to turn in 24,800 square feet of office space. The Corps notified the General Services Administration (GSA) that the space would be withdrawn from the Air Force's Standard Level User Charges (SLUC) in accordance with the Federal Property Management Regulation (FPMR).¹⁸

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DSP ground system improvements extended also to the communications network connecting the processing stations and command centers. A contract (GCN III) let to Technology Development Corporation of California in August 1979, called for alternate routing of data, redundant communications, and protection against electro-magnetic pulse (EMP). The Air Force was not satisfied with the contractor's performance over the next two years, principally because of cost growth and delays. In September 1981 Space Division recommended the TDC contract be terminated.⁵¹ SAC and ADC agreed, and it was ended effective 2 October.⁵² At the end of the year, Space Division was examining an option which would use equipment already purchased under the contract to satisfy almost all of the requirements for improved communications.⁵³

Assessment: The NORAD Cheyenne Mountain Complex

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Others were the Core Processing Segment and the Modular Display Segment. The CPS consisted of three 6080 computers, one each for the NORAD Computer System, the Space Defense Operations Center (SPADOC), and one for operational and maintenance backup. The MDS consisted of four NOVA 840 computers and associated controls and display devices.

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Chapter III

SPACE DEFENSE

Surveillance

The Space Detection and Tracking System was a worldwide network of ground based radars and optical sensors, linked to the Space Defense Operations Center in Cheyenne Mountain, whose mission it was to detect, identify, and track all man-made objects in space; warn of and verify space events; maintain a catalog of objects in space; and by agreement provide space data to authorized agencies (see map, p. 26). Three categories of sensors served the system: dedicated sensors whose primary mission was space detection and tracking; collateral sensors whose primary mission was other than space detecting and tracking support; and contributing sensors which provided data under terms of a contract on a part-time basis (see chart, pp 24-25). With one exception, the Space Detecting and Tracking System remained unchanged during 1981. On 31 May, the Canadian satellite tracking unit at Cold Lake, Alberta, was deactivated. Two major system improvements were underway during the year: deployment of the Ground Based Electro-Optical Deep Space Surveillance System (GEODSS) to replace the Baker-Nunn space camera, and deployment of two of three required sensors, known as the Pacific Radar Barrier (PACBAR).

Optical Sensors

Optical cameras were the mainstay of the USAF SPACETRACK portion of the Space Detection and Tracking System. Four Baker-Nunn cameras, operated on contract by Bendix Field Engineering Corporation and Joseph Nunn Associates, were located in California, New Zealand, South Korea, and Italy; and two more were in Canada, operated by Canadian Forces personnel. These 20-year-old cameras were due to be replaced by the Thompson-Ramo-Woolridge (TRW) GEODSS.

In early 1981, neither ADCOM nor SAC had faith in the GEODSS schedule. Although the IOC date for the first site, at Stallion Range Center, White Sands Missile Range, New Mexico, was about a month away, the contractor had not yet finished in-plant testing and had not begun testing at the site.

* GEODSS would provide near real-time photometric identification of space objects in highly elliptical and geosynchronous orbits, rapid discrimination and characterization of newly launched objects, and limited warning of satellite attacks. Data would be relayed by microwave and satellite to the NCMC.

THE SPACE DETECTION AND TRACKING SYSTEM

1981

Site	Unit	Equipment
Cheyenne Mountain, CO	NORAD Command Post	Space Defense Operations Center (SPADOC) and SPADOC Computation Center (SCC)
Dahlgren, VA and 9 southern U.S. sites from CA to GA	U.S. Navy Space Surveillance System (NAVSPASUR)	Computational Center
St Margarets, New Brunswick (SITU)	Canadian Forces	3 transmitters and 6 receivers Baker-Nunn Camera & SOI Photometer

USAF SPACETRACK SYSTEM DEDICATED SENSORS*

Edwards AFB, CA	Bendix Field Engineering Corp and Joseph Nunn Associates (contractors)	Baker-Nunn Camera
Mt John, New Zealand Pulmosan, South Korea San Vito, Italy Maui, Hawaii	OLLA, 46 AERODW	Maui Optical Tracking & Identification Facility (MOTIF) (Electro-Optical)

CONTRIBUTING SENSORS

Kwajalein Atoll**	Kieruan Reentry Measurement Site (KREMS)	Altair, Alcor Radars
Westford, MA	MIT Lincoln Lab	Millstone Hill Haystack Radars
Stallion, NM	USAF (AFSC)	GEODSS (Experimental Test Site)
Ascension Island	Eastern Test Range	FPQ-15
Antigua Island	Eastern Test Range	FPQ-14
Kaena Point, Hawaii**	Western Test Range	FPQ-14

COLLATERAL SENSORS

Thule, GL	Ballistic Missile Warning System (BMEWS)	4 FPS-50, 1 FPS-49
Clear, AK	Ballistic Missile Warning System (BMEWS)	3 FPS-50, 1 FPS-92
Fylingdales, UK	Ballistic Missile Warning System (BMEWS)	3 FPS-49
Eglin AFB, FL	SLBM	FPS-85 (Phased Array) (Alternate Space Computation Center)
Otis AFB, MA	SLBM	FPS-115 (Phased Array)
Beale AFB, CA	SLBM	FPS-115 (Phased Array)
Concrete, ND	Perimeter Acquisition Radar Attach Characterization System (PARCS)	FPQ-16 (Phased Array)
Shemya, AK	COBRA DANE	FPS-108 (Phased Array)
Pirincik Installation	TUSLOG Det 8	1 FPS-17, 1 FPS-79
Diyarbakir, Turkey		

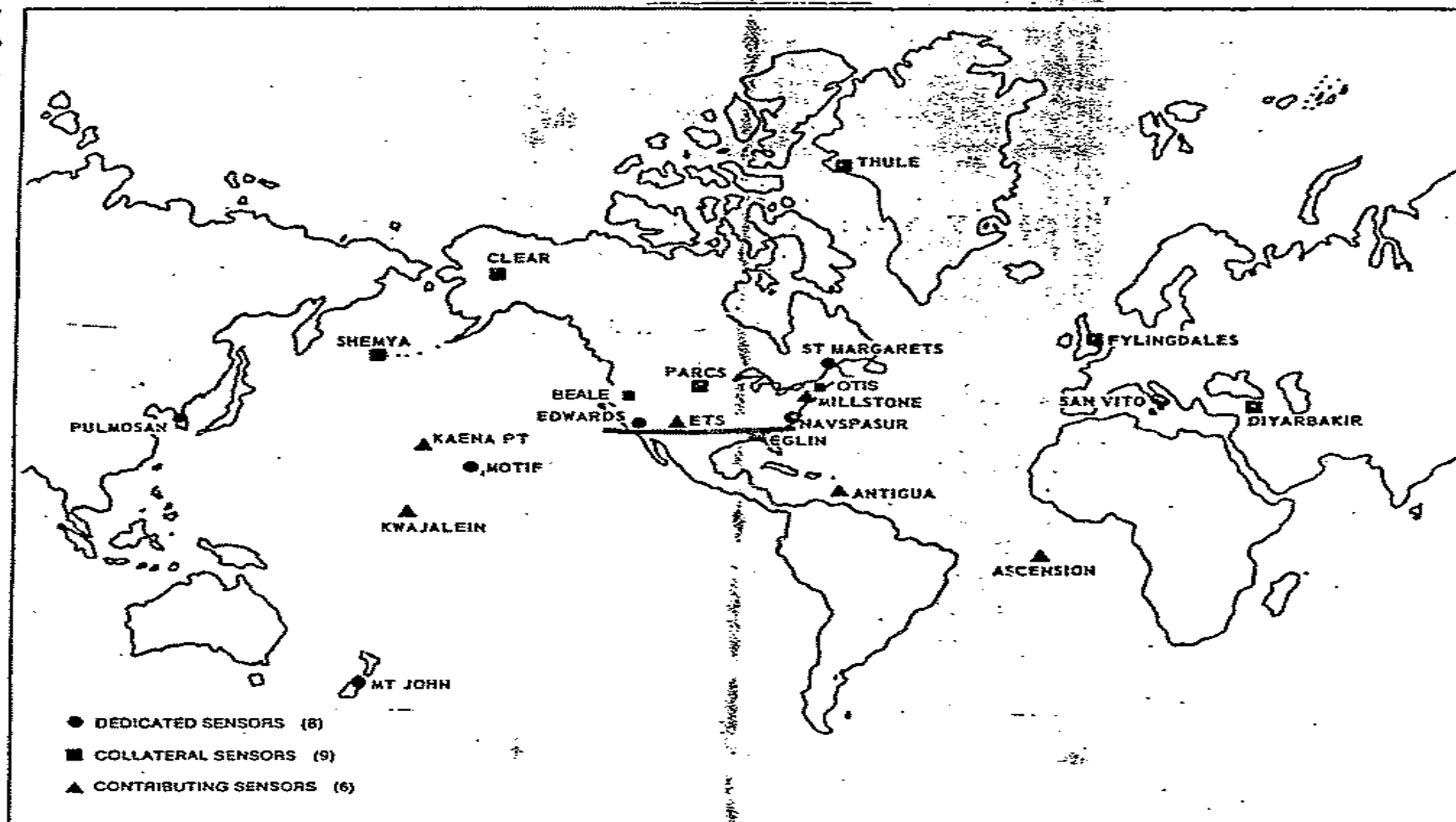
* The sensor network was divided into three categories:

- a. Dedicated - a NORAD/ADCOM operationally assigned sensor with a primary unclassified mission of support.
- b. Collateral - a NORAD/ADCOM operationally assigned sensor with a primary mission other than support.
- c. Contributing - a non-NORAD/ADCOM assigned sensor with a primary mission other than space detection and tracking support but which is under contract or agreement to support the system.

** Provides data on a reimbursable basis, when requested.

SOURCE: NORAD Forces and Program Change Summary (S-Revw 1 Jan 87), 1 Jan 82. (Material used unclassified).

SPACE DETECTION AND TRACKING SYSTEM



Delays in system integration and testing evoked expressions of concern from the two commands to ESD and predictions of harm to operations should the GEODSS be delayed beyond the shutdown of the Baker-Nunn system. Both insisted, nevertheless, that the contractor should not be permitted to make up time by compressing the Initial Operational Test and Evaluation (IOT&E) testing schedule.¹ In March, TRW said that due to problems encountered during Development Test and Evaluation (DT&E) in its plant, DT&E and IOT&E at Site 1 would not be completed until 15 July. ESD thought the end of October was a more reasonable date. ADCOM looked to December 1981 for Site 2 completion and February 1982 for Site 3, but still no definitive schedule existed.² TRW began DT&E at Site 1 in June, running the tests in parallel with a similar effort at its plant. This work continued through the end of the year, with IOT&E scheduled to begin 20 January 1982.³ ADCOM now looked to April 1982 as the operational date for Site 1, 1 July for Site 2, and 1 October for Site 3.⁴ Site 4 would be located on the island of Diego Garcia in the Indian Ocean, and Site 5 was tentatively sited in Portugal. These last two had not yet been funded.⁵ These delays necessarily extended operation of the Baker-Nunn sites at Mt John, New Zealand, and Pulmosan, Korea, through the end of FY-82. The Canadian site at St. Margarets and the U.S. site at San Vito, Italy would remain open until GEODSS sites 4 and 5 achieved IOC.⁶ The other Canadian site, at Cold Lake, was closed on schedule 1 June 1981.

The Pacific Radar Barrier (PACBAR) Network

The PACBAR was a system of three radars intended to close a gap in surveillance coverage in the western Pacific of new Soviet and Peoples Republic of China prograde satellite launches. Plans called for reinstallation of an AN/GPS-10 radar in the Philippines as the western segment of the barrier; modification of the U.S. Army's ALTAR radar on Roi-Namur Island, Kwajalein Atoll, Marshall Islands; and locating a third, unspecified radar, on Guam. In 1981 only the first two were far enough advanced to warrant discussion.

Political and funding problems afflicted the AN/GPS-10 reinstallation. Delays in obtaining Government of the Philippines approval had delayed the project to the point where SAC and ADCOM were looking to Australia and Guam for alternate sites which could be made operational by the middle of 1983, the date when the radar was needed to support U.S. ASAT testing.⁸ Further effort

* Site 2 would be located at Choejongsan, South Korea; and Site 3 Mt Haleakala, Maui, Hawaii.

** Advanced Research Projects Agency Long Range Tracking Instrumentation Radar.

along those lines proved unnecessary, however, when, on 5 February, President Marcos of the Philippines approved erection of the radar on the grounds of the U.S. Naval Station at San Miguel. SAC efforts thereafter to obtain about \$300,000 in construction funds for the project brought a USAF reply that they wouldn't be available until the beginning of the new fiscal year, but it said that work should proceed using a portion of available operations and maintenance funds.¹⁰ Although SAC and General Electric Corporation were ready by the middle of June to sign a contract, it was delayed until 6 August for want of approval of public affairs guidance by the Armed Forces of the Philippines. The reinstallation would cost about \$14M, and IOC was scheduled for 1 December 1982.¹¹

The eastern anchor of PACBAR, the Army's ALTAR radar, was being modified by GTE Sylvania to perform near earth (less than 3000 nm) and deep space (beyond 3000 nm) surveillance. Contractor problems had developed in 1980, and they continued to afflict program schedules in 1981. The near earth capability was slipped from July to September, but an interim capability was achieved 1 October. A full near earth capability was expected in early calendar year 1982, and a deep space capability in May 1982. The U.S. Army agreed to absorb costs of extending the work into FY-82.¹²

Protection and Negation

At first the SPADOC was located temporarily in the ADCOM Intelligence Center, Cheyenne Mountain Complex. Plans called for it to be moved into the former Space Defense Center early in 1981. Construction began in late 1980 to convert the area (Room 2308) for SPADOC use, and although some changes in floor layout and a short strike delayed completion, the Center began Phase 2 operations in its new quarters in the middle of July.¹³ The

* Information regarding new foreign launches and satellite track data sent to the NCMC by autodin.

SPADOC mission was to collect data regarding the status of U.S. space systems and maintain a space order of battle for the National Military Command Center. Its capabilities to do so were initially limited, since ADCOM was in the process of concluding agreements on the exchange of information with satellite owners. By early 1981, Memoranda of Agreement (MOA) had been signed with six DOD agencies (covering the Air Force Satellite Control Facility (AFSCF) and 8 different satellite systems), as well as one civil agency, the National Weather Service (two satellite systems). Agreement on the more detailed information required, the interface control drawing, was available only for the AFSCF. Three more MOAs were concluded during the year: with the Goddard Space Flight Center, with SAC for the Defense Meteorological Satellite Program, and with NASA for the Space Transportation System. Also added were five more ICD agreements. In all, therefore, six space systems were reporting their status to SPADOC by the end of the year. The remaining 20 were expected to complete working agreements with ADCOM by the end of FY-83.¹⁵

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Another recommendation approved was that a central reviewing and coordinating authority be formed to oversee ADP acquisition for the SPADOC, IDHS, and SCC. It was called the Integrated SPADOC, IDHS, SCC (ISIS) Steering Group and first met 15 January 1981.

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* (U) The Air Force Council, Air Force Policy Council, and the Air Staff Board.

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* The first mission when the Shuttle would come within coverage of these radars was planned for April 1983. In the meantime, an analysis would be made to determine if power levels could be lowered without affecting their operational missions.

**COMBO was a computer applications program used to calculate a close approach between a cataloged satellite of interest and other cataloged orbiting objects. In this case, ADCOM would keep NASA apprised of any potential danger of collision between the Space Shuttle and another orbiting object.

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APPENDIX XI

SURVEILLANCE AND WARNING RADARS
31 December 1981Ballistic Missile Early Warning System (BMEWS)

<u>Location</u>		<u>Radar</u>	
		<u>Detection</u>	<u>Tracking</u>
Thule AB, Greenland	4 FPS-50	(1 ea 40° Sectors) + 40° SLBM Sector using the FPS-49 (Sector 5)	1 FPS-49
Clear AFS, Alaska	3 FPS-50	(1 ea 40° Sectors) + 40° SLBM Sector using the FPS-92 (Sector 0)	1 FPS-92
Fylingdales, United Kingdom			3 FPS-49

Sea Launched Ballistic Missile
Detection and Warning System (SLBM D&W)

<u>Location</u>	<u>Radar</u>
Beale AFB, CA	FPS-115 (Phased Array)
Otis AFB, MA	FPS-115 (Phased Array)
MacDill AFB, FL	FSS-7
Eglin AFB, FL	FPS-85 (Phased Array)
Concrete, ND	FPQ-16 (Phased Array)

COBRA DANE and TUSLOG Det 8 (Multi-Mission):
Intelligence, SPACETRACK/Missile Warning

<u>Location</u>	<u>Radar</u>	
	<u>Detection</u>	<u>Tracking</u>
Shemya AFB, Alaska	AN/FPS-108 (Phased Array)	
Pirinciklik Installation near Diyarbakir, Turkey	1 FPS-17	1 FPS-79

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NOTES

Chapter I

1. The ADCOM mission was stated in the JCS Unified Command Plan (SM-356-75)(C-Dec1 31 Dec 81)), 27 Jun 75, pp. 8-9. Air Force Regulation 23-9, 1 Dec 79 described the ADC mission.

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GLOSSARY OF ABBREVIATIONS

AAC	Alaskan Air Command
ADC	Aerospace Defense Center
ADCOM	Aerospace Defense Command
ADCOS	Aerospace Defense Combat Operations Staff
ADTAC	Air Defense Tactical Air Command
AERODW	Aerospace Defense Wing
AFB	Air Force Base
AFLC	Air Force Logistics Command
AFSARC	Air Force Systems Acquisition Review Council
AFSCF	Air Force Satellite Control Facility
AFTEC	Air Force Test and Evaluation Center
AIRCOM	Air Command (Canada)
ALCOP	Alternate Command Post
AMRAAM	Advanced Medium Range Air-to-Air Missile
ANG	Air National Guard
ANMCC	Alternate National Military Command Center
AS	Air Station
ASAT	Antisatellite
ASM	Air-to-Surface Missile
AWACS	Airborne Warning and Control System
BAI	Backup Aircraft Inventory
BLOS	Beyond Line of Sight
BMEWS	Ballistic Missile Early Warning System
BPS	Bits Per Second
BUF	Back-Up Facility (to NCMC)
BVR	Beyond Visual Range
CADIN-Pinetree	Continental Air Defense Integration North-Pinetree
CASS	SPADOC 4/SCC Upgrade
CEMIRT	Civil Engineering Maintenance, Inspection, Repair and Training
CMSG	Cheyenne Mountain Support Group
COMBO	Computations of Miss Between Orbit
C2	Command and Control
C3	Command, Control, and Communications
CONPLAN	Contingency Plan
CONUS	Continental United States
CGS	Continental Ground Station (DSP)
CINCAD	Commander-in-Chief Aerospace Defense Command
CINCNOAD	Commander-in-Chief North American Aerospace Defense Command
CPS	Core Processing Segment (of 427M System)
CSOC	Consolidated Space Operations Center
CSS	Communications System Segment (of the 427M System)
DCS	Deputy Chief of Staff
DEW Line	Distant Early Warning Line
DIP	Display Information Processor

DOD	Department of Defense
DRCU	DEW Line Record Communications Upgrade
DRU	Direct Reporting Unit
DSP	Defense Support Program
DT&E	Development Test and Evaluation
ECCM	Electronic Counter-Countermeasure
EDEW	Enhanced DEW Line
ERS	Experimental Radar System
ESD	Electronic Systems Division
FAA	Federal Aviation Administration
FCS	Full Communications Services
FIG	Fighter Interceptor Group
FIS	Fighter Interceptor Squadron
FOC	Full Operational Capability
4C	Command, Control and Communications Company
FPMR	Federal Property Management Regulation
GCN	Ground Communications Network (DSP)
GEODSS	Ground Based Electro-Optical Deep Space Surveillance System
HAC	Hughes Aircraft Corporation
HF	High Frequency
IAP	International Airport
ICS	Independent Cost Study
IOC	Initial Operational Capability
IOT&E	Initial Operational Test and Evaluation
IRSTS	Infrared Search and Track System
ITT-N	International Telephone & Telegraph North
JSS	Joint Surveillance System
JTD	Joint Table of Distribution
LPS	Large Processing Stations (DSP)
LRR	Long-Range Radar
MAR	Minimally Attended Radar
MEBU	Mission Essential Backup
MGS	Mobile Ground Station (DSP)
MIP	Missile Impact Predictor (BMEWS Subsystem)
MIRV	Multiple Independently Retargetable Vehicle
MOA	Memorandum of Agreement
MPF	Multi-Purpose Facility
NAS	NORAD Alerting System
NCMC	NORAD Cheyenne Mountain Complex
NMCC	National Military Command Center
NORAD	North American Aerospace Defense Command
NR	NORAD Region
ORS	Operational Radar System
OTH-B	Over-the-Horizon Backscatter
PACBAR	Pacific Radar Barrier
PARCS	Perimeter Acquisition Radar Attack Characterization System
POM	Program Objective Memorandum

PPBS	Planning, Programming, and Budgeting System
PSP	Programming Signal Processor
RADIL	ROCC/AWACS Digital Information Link
RAPIER	Rapid Emergency Reconstitution Team
RCC	Region Control Center
RIOC	Reduced Interim Operation Capability
ROC	Required Operational Capability
ROCC	Region Operations Control Center
RSSF	ROCC System Support Facility
SAGE	Semi-Automated Ground Environment
SISAARG	SPADOC/IDHS/SCC ADP Acquisition Review Group
SLBM	Sea-Launched Ballistic Missile
SLUC	Standard Level User Charges
SOC	System Operational Concept
SON	Statement of Need
SOW	Statement of Work
SPADOC	Space Defense Operations Center
SPS	Simplified Processing Station (DSP)
SRR	Short-Range Radar
SSS	Special Security Squadron
STS	Space Transportation System
TAC	Tactical Air Command
TOR	Tactical Operations Room (at BMEWS Sites)
TOR	Terms of Reference
TW/AA	Tactical Warning and Attack Assessment
TWS	Track-While-Scan
UAR	Unattended Radar